Small Business Innovation Research/Small Business Tech Transfer

Low Power, Self Calibrated Vector Magnetometer, Phase I

Completed Technology Project (2007 - 2007)

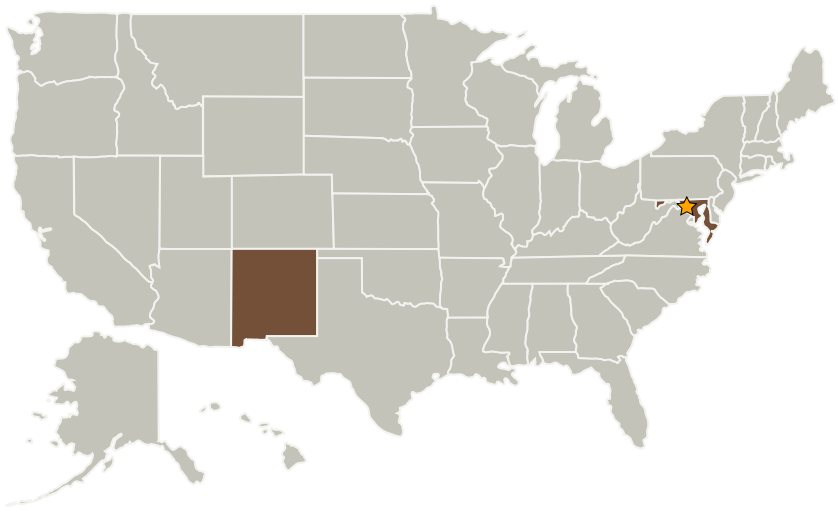
Project Introduction

This Phase I SBIR project investigates a novel approach to vector magnetometry based on high precision measurements of the total magnetic field. The calibration is based on the measurement of the Larmor frequency of an atomic vapor. The accuracy should be sufficient to determine the curl of the magnetic field from measurement points separated by about 80 meters. A novel magnetic modulation technique will be compared to the technique used in Cassini and Ulysses. Two methods for controlling the atomic density will be compared.

Anticipated Benefits

Potential NASA Commercial Applications: Precision vector and total field magnetometers for geological exploration and laboratory measurement. Low cost nuclear magnetic imaging.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
Southwest Sciences, Inc.	Supporting Organization	Industry	Santa Fe, New Mexico

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

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Primary U.S. Work Locations	
Maryland	New Mexico

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

David C Hovde

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.3 In-Situ Instruments and Sensors
    - TX08.3.1 Field and Particle Detectors